

The Examiner has rejected claims 1-3, 5, 8, 16-18, 36, 38 41-42, 45 and 47 under Sec. 103(a) as being unpatentable over Pipes in view of Wilding.

Pipes discloses a shuttle assembly of elements placed alongside one another with chains (66) mounted on sprocket wheels (48, 49, etc.). Pipes does not lend itself to driving motion provided by hand, and as the Examiner concedes, Pipes does not disclose controllably reversible motion.

Wilding discloses an automatic storage system having conveyor apparatus for handling particulate products such as peanuts or cereal. An electronic controller 25 is applied to control the conveyor movements using electronic sensors such as a photocell, see col. 5, lines 29-32, and col. 6, lines 53-57.

The application of an electronic controller to automated control systems as in Wilding can hardly be compared with the simple, controllably reversible motion provided by the system of the present invention. This is because as now recited in amended claim 1, the inventive system is hand-movable, meaning it can be moved by hand, while heavy, automated systems are typically not designed for manual operation. Therefore, an automated system such as Wilding does not provide a relevant teaching in this case and is not a basis for comparison, being electronic.

It would therefore be unreasonable to consider the combination of Pipes and Wilding as rendering the claims obvious, since a skilled person would not be prompted to combine them nor consider this combination to be obvious.

The Examiner has rejected claim 50 under 35 U.S.C. Sec. 103(a) as being unpatentable over Pipes in view of Wozniak.

The differences between pipes and the present invention are described in this response.

The differences between Wozniak and the present invention are:

Wozniak discloses a hand turning device.

In contrary to Wozniak, the present invention discloses a **Hand-movable-slidable** device that can multiply, **in a direction in-line** the movement of a sliding hand movement while moving **with the same hand** to any other direction while sliding, (fig. 1-6,19,26,53) and even by a leg sliding movement (fig 54 - the drum)

It is clear, that Wozniak's device is not a hand/leg operating device which moves **in a direction in-line** with a movement of a sliding hand/leg movement and is not an operation device like the present invention.

The Examiner has rejected claims 1-3, 5, 8-12, 16-19, 23 and 40 under Sec. 103(a) as being unpatentable over White in view of Wilding.

White discloses a collapsible structure which employs an arrangement of sprocket wheels and chains to allow telescopic movement of a sectioned structure. As can be seen by a careful reading of White, the telescopic elements (20, 23, 24 and 25) are on the upper portion of the structure, while the mechanism providing movement, including the chain 43, is below and separate from this.

This is unlike the invention, where the linking means is "arranged on the said (first and second) elements".

In addition, the requirement in White for wheels carrying the chains is not a requirement of the present invention. For example, Figs. 7-9 of the specification of the present invention show a linking means without chains comprising a single, double-toothed sprocket wheel, which converts the driving motion to a driven motion. Even 78 years after White was published, the practical applications do not exist and are also very different from those of the present invention.

The Examiner concedes that White does not disclose the use of a controller. Wilding, as stated above, is not applicable here for controlling the movement, since Wilding teaches an electronic controller for automated control systems, rather than the simple, controllably reversible motion provided by the system of the present invention. An automated system such as Wilding does not provide a relevant teaching in this case and is not a basis for comparison, since it is an electronic device.

It would therefore be unreasonable to consider the combination of White and Wilding as rendering the claims obvious, since a skilled person would not be prompted to combine them nor consider this combination to be obvious.

The Sandberg reference, for its teaching of a hand crank, is not a basis for rejection since it adds nothing to the overall system of telescopic motion as presented by the invention. Sandberg teaches a fire escape within which only the extension motion which raises the ladder is controlled, while the retraction motion is not controlled and is provided by gravity. A hand crank in a gravity-dependent system does not teach controllably reversible motion, nor does it teach how this could be achieved in combination with other components. Applicant respectfully requests that the Examiner carefully reconsider the scope of the invention, as now claimed, with respect to the limited teaching of Sandberg.

In summary, the present invention provides a tool attached to a telescopic system not requiring a support base, with the system enabling, from either end of the system, hand-movable, controllably reversible driving motion in-line with the orientation of the elements, and controllably reversible, non-gravity dependent, linear-to-linear driven motion. Such a system is deemed not to have been obvious since the teachings of Pipes, White, Wilding and Sandberg do not disclose this, or even suggest such a combination, nor do they disclose an attached tool or object for performing useful work.

The motion of the linking means in the invention is adjustably multipliable, with the linking means adjustably arranged on the elements, as can be seen in Figs. 10-15b, 22, 24, and 30, etc.

As mentioned previously, the ability to reverse the driving and driven motions gives the present invention the advantage of having a design which solves the problems of reaching both high and low areas. Since these particular problems were not solved by the prior art, the invention cannot be deemed to be obvious.

As for the Examiner's statement that the Applicant insists on arguing for claims of a scope that is not patentable, is respectfully maintained by the Applicant that the patentability of the pending claims is a matter to be decided

by the Patent Office, and ultimately, the courts, but clearly, the intent is to achieve the broadest claims possible, as allowed by law.

Since the concept of the invention has many and varied applications, some of which may be developed in the future, Applicant wishes to have the broadest claim possible to allow for claim coverage wherever applicable.

The provision by the present invention of reversible directions of driving and driven motions is deemed not to have been obvious, since the prior art does not disclose this, nor does it disclose a device like that of the present invention.

In citing the prior art references under Sec. 103(a), the question is raised whether the references themselves would suggest the invention, as stated in the decision of *In Re Lintner* (172 USPQ 560, 562, CCPA 1972):

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the references before him to make the proposed substitution, combination or other modification."

Similarly, *In Re Regel* (188 USPQ 136 CCPA 1975) decided that the question raised under Sec. 103 is whether the prior art taken as a whole would suggest the claimed invention to one of ordinary skill in the art. Accordingly, even if all the elements of a claim are disclosed in various prior art references, the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why one of ordinary skill would have been prompted to combine the teachings of the references to arrive at the claimed invention.

Simply put, and as stated in *In re Clinton* (188 USPQ 365 CCPA 1976), "do the references themselves ... suggest doing what appellants have done", such that there is a requirement that the prior art must have made any proposed modification or changes in the prior art obvious to do, rather than obvious to try.

It is respectfully put forward by Applicant that there is not any substantial reason to view the cited references as making the invention obvious, since none of them, individually or in combination, suggests reversible directions of

driving and driven motions, as provided by the invention. To say that this feature is obvious to try, or a design choice, as the Examiner seems to do, is one thing, but to recognize the above-outlined design advantages is another thing.

Therefore, Independent claim 1 is deemed to be patentable over the prior art, and the dependent claims are likewise deemed patentable being based thereon.

The Examiner has rejected claim 4 under 35 U.S.C. Sec. 103(a) as being unpatentable over White in view of Wilding as applied to claims 1-3, 5, 8-12, 16-19, 23, and 40 above, and further in view of Sandberg.

In the response of the July 11, 2001, Applicant's former patent lawyer, Ed Langer, has made these amendments and wrote:

Claim 1 has been amended. Claim 4 has been deleted. Thus, claims 1-3 and 5-49 remain in the case.

The specification has been amended to overcome the objection under 37 CFR 1.71 and 35 USC 112, by the addition of the term "hand-movable" at page 8, line 14. This amendment replaces the previously suggested terminology, "hand-holdable" and it is believed that "hand-movable" is more precise and clearly understood, since it means that the elements may be moved by hand.

As will be clear from a careful reading of the specification, Applicant was in possession of the subject matter of the claimed invention at the time of filing the application, especially in relation to the hand-movable aspect. For example, at page 8, line 16 it is stated that "the roller and pipe are operated by holding the fixed handle 114 in one hand, and operating the activation handle 116.....with the other hand." The illustration of this activity is clear from Figs. 5 and 6 where a man is shown operating the segments of telescopic tool 100, and this shows that the device is hand-movable.

Additional illustrations of this activity include Fig. 26 where a shoulder-belt mounted pipe is arranged for fruit picking, and as stated at page 21 line 18 "it is possible to use one hand that will move the activating handle..." Similarly, regarding the sail boat mast at page 51 line 18, it is stated, "a lifting arm 918 is connected to the top of the second segment 906 for the user to reach it by handle 920", so that it is clear that the sailboat mast segment is operable by hand motion, therefore, it is hand-movable.

Furthermore, the recitation of "hand-motion" in claim 4 clearly means "hand-movable", and this has now been incorporated in claim 1, and claim 4 deleted.

Therefore, there can be no question as to whether the telescopic tool is hand-movable, and this new terminology should be acceptable and should not be considered new matter, since it is clearly based on the initial specification, claims and drawings.

As stated in the previously filed Remarks, the object of the present invention is to overcome the problems of existing products exhibiting telescopic movement. The invention provides a system of telescopic elements for multiplying the effective physical work achieved by the telescopic motion of various structures, with many applications including cleaning systems, vacuum cleaners, measuring rods, tools, paint rollers, wall scrapers, music stands and instruments, parasols, shades, curtains, sailing boat masts, and structures such as chairs, tripods, tables, tents, etc.

By way of a quick review, the previous amendments to claim 1 have already incorporated the following features:

- 1) simultaneous driving and driven motion of linking means and first and second elements;
- 2) driving motion of the linking means is controllably reversible;
- 3) driven motion of said first and second elements is non-gravity dependent;
- 4) both extension and retraction motion of the elements are under full, reversible and multipliable control of the mechanism;
- 5) motion of the elements is in-line with their orientation, achieving linear-to-linear driven motion; and
- 6) the elements are connectable to a tool or other object.

As now amended, independent claim 1 incorporates another feature previously recited in claim 4. This feature defines the relationship between the directions of driving and driven motion, such that when driving motion is applied between an end of a selected one of the first and second elements, and the linking means (loop), there results one of two types of extension and retraction motion, with driven motion developed either in the same, or reverse direction.

As mentioned in the previously filed Remarks, examples of this motion are described in the text, with reference to Figs. 1-6.

The advantage of this operation is described in the text at page 8, last paragraph, through page 9, line 12, with reference to Figs. 1-6. In one case, where the operating hand moves the handle opposite the motion of segment 106, the user reaches greater distances, "which is good for working at heights..." In another case, where the operating hand moves in the same direction as the segment 104, this arrangement is "effective for working in lower places". Thus, it can be seen that the inventive tool solves a particular problem at high and low locations, and it is solved by this unique motion.

Thus, as per amended claim 1, the ability to select the direction of the driven motion, via application of driving motion with respect to an end of a selected one of the segments during extension or retraction, gives the present invention unique advantages over the prior art.

The importance of this feature is that it defines the directions of the driving motion and the driven motion, depending on which of the first or second element is selected as the end with respect to which the driving motion is applied to the linking means.

If the driving motion is applied to the linking means with respect to the first element, it is clear that the first element is held fixed in place. Alternatively, if the driving motion is applied with respect to the second element, it is clear that the second element is held fixed in place. This choice is then the basis for the direction of the resulting driven motion, and it serves to highlight the versatility of the inventive device, as it can be operated from either end of the first and second elements.

Thus, in the case of two nested elements, the end of the narrow, inner element or the larger, outer element can be held, and the device operated such that the other element is provided with driven motion. The tool or other object then benefits from the motion imparted to the element provided with driven motion, in the direction selected.

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It is respectfully put forward by Applicant that there is not any substantial reason to view the cited references as making the invention obvious, since none of them, individually or in combination, suggests reversible directions of driving and driven motions, as provided by the invention. To say that this feature is obvious to try, or a design choice, as the Examiner seems to do, is one thing, but to recognize the above-outlined design advantages is another thing.

Therefore, independent claim 1 is deemed to be patentable over the prior art, and the dependent claims are likewise deemed patentable being based thereon.

In view of the foregoing amendments and remarks, all of the claims remaining in the application are deemed to be allowable. Further reconsideration and allowance of the application is respectfully requested at an early date.

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APPENDIX

Listing of the Claims:

Claim 1 (previously amended)- A motion transmission and multiplication system for use with systems, devices or structures that require movement of segments, to enable extendable and retractable motion, such as cleaning systems, measuring systems, hand-movable tools, music instruments and accessories, electrical and telecommunication devices, transportation and delivery systems, shades, sailing boats, chairs, tripods, tables and tents, said motion transmission and multiplication system comprising:

at least first and second elements each having anterior and posterior ends, said elements extending in the same orientation, each element having at least one point thereon connectable to a tool or other object, and at least a first means linking said first and second elements and being movable with respect to at least one of them, said first linking means also being connectable to an additional element;

said first linking means being arranged on said elements such that when said first linking means is moved with a controllably reversible driving motion with respect to either of said anterior or posterior ends of a selected reference one of the at least first and second elements, wherein said driving motion is in a direction in-line with said orientation, then said first and second elements, and if connected, said additional element are simultaneously provided with a controllably reversible and multipliable, non-gravity dependent, linear-to-linear driven motion with respect to each other in-line with said orientation;

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said driven motion being in the same direction as said driving motion, or reverse thereto, in accordance with which reference one of said first and second elements was selected in respect of said driving motion.

Claim 2 (original). The system of claim 1 wherein said driving motion is in the same direction as said driven motion of said second element.

Claim 3 (original). The system of claim 1 wherein said driving motion is in the opposite direction of said driven motion of said second element.

Claim 4 (cancelled).

Claim 5 (original). The system of claim 1 wherein said second element is nested within said first element and arranged for telescopically-driven motion therein, said first linking means comprising a flexible loop attached at a posterior portion of said second element and arranged such that said driving motion is loop-type on said first element, to provide said telescopically-driven motion.

Claim 6 (original). The system of claim 5 further comprising an elastic hose connected internally between said first and second elements to enable flow of materials between input and output ends thereof.

Claim 7 (original). The system of claim 6 further comprising a speed control element associated with said first and second elements for operating an apparatus in relation to said driven motion.

Claim 8 (original). The system of claim 5 further comprising a third element nested within said second element and arranged for telescopically-driven motion therein, said third element being linked to said first element by a second linking means comprising a second flexible loop

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being attached at a posterior portion of said third element and being arranged such that said driving motion is loop-type on said second element, to provide said telescopically-driven motion of said third element.

Claim 9 (original). The system of claim 1 wherein said second element is nested within said first element and arranged for telescopically-driven motion therein, said first linking means comprising a first rack arranged such that said driving motion is of a sliding type on said first element, said first rack engaging a pinion gear rotatably supported at an anterior portion of said first element, a gearwheel coaxial with said pinion gear engaging a second rack mounted on said second element such that said sliding-type driving motion of said first rack on said first element provides said telescopically-driven motion.

Claim 10 (original). The system of claim 9 wherein a gear ratio between said pinion gear and gearwheel fixes said telescopically-driven motion.

Claim 11 (original). The system of claim 1 wherein said second element is nested within said first element and arranged for telescopic motion therein, said first linking means comprising a toothed flexible loop arranged such that said driving motion is of a loop-type on said first element, said toothed loop engaging a pinion gear rotatably supported at an anterior portion of said first element, a gearwheel coaxial with said pinion gear engaging a second rack mounted on said second element such that said loop-type driving motion of said toothed flexible loop on said first element provides said telescopically-driven motion.

Claim 12 (original). The system of claim 11 further comprising a motor connected to said gearwheel for driving said loop-type motion.

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Claim 13 (original). The system of claim 1 wherein said second element is nested within said first element and arranged for telescopically-driven motion therein, said first linking means comprising a first rigid arm attached at an anterior portion of said second element and arranged such that said driving motion is of a sliding-type on said first element, to provide said second element with said telescopically-driven motion.

Claim 14 (original). The system of claim 13 further comprising a third element nested within said second element and arranged for telescopically-driven motion therein, and second and third linking means, said second linking means developing driven motion in response to said driving motion of said first linking means, said third linking means developing driven motion in response to said driven motion of said second linking means, to provide said telescopically-driven motion of said third element.

Claim 15 (original). The system of claim 14 wherein said second linking means comprises a flexible loop arranged for loop-type motion on said first rigid arm, and said third linking means comprises a second rigid arm arranged for sliding-type motion on said first rigid arm, said loop being attached to an anterior portion of said first element, said second rigid arm being attached between said loop and said third element.

Claim 16 (original). The system of claim 1 wherein said first element is a first rigid arm and said second element is a second rigid arm which slides thereon, said first rigid arm having a flexible loop arranged for loop-type driving motion between its ends, said second rigid arm being attached at a posterior end to said flexible loop such that when said loop-type driving motion is provided, said second rigid arm is provided with driven motion.

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Claim 17 (original). The system of claim 16 provided as a kit for self-assembly and attachment to a set of elements to be nested one within another for providing telescopically-driven motion.

Claim 18 (original). The system of claim 16 further comprising a set of first, second and third elements nested within one another and arranged for telescopically-driven motion between them, said first rigid arm being arranged for sliding-type driving motion on said first element, and being attached to an anterior portion of said second element, said flexible loop being attached to said first element, and said second rigid arm being attached to said third element to provide said telescopically-driven motion.

Claim 19 (previously amended). The system of claim 18 in combination with nested vacuum cleaner rods arranged for telescopically-driven motion.

Claim 20 (original). The system of claim 19 further comprising an expandable elastic tube within said vacuum cleaner rods for suction transfer.

Claim 21 (original). The system of claim 19 further comprising an expandable elastic tube external to said vacuum cleaner rods for suction transfer.

Claim 22 (original). The system of claim 19 further comprising an elastic sleeve around said rod elements to maintain a dust/dirt barrier.

Claim 23 (original). The system of claim 1 further comprising a motorized screw and a third element nested within said second element and arranged for telescopically-driven motion therein, said motorized screw being arranged such that said driving motion is screw-type on said second element, to provide said third element with said telescopically-driven motion.

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Claim 24 (previously amended). The system of claim 23 further comprising limit switches mounted on at least one of said elements for electrically controlling said screw-type driving motion.

Claim 25 (original). The system of claim 1 further comprising a central element disposed proximate said first and second elements, said central element having an element slidably mounted thereon and being connected to provide sliding-type driving motion to said first linking means.

Claim 26 (previously amended). The system of claim 25 in combination with a tripod having a plurality of legs each pivotable at an end of said central element and being arranged for said telescopically-driven motion.

Claim 27 (previously amended). The system of claim 25 in combination with a music stand having a plurality of legs each pivotable at an end of said central element and being arranged for said telescopically-driven motion.

Claim 28 (previously amended). The system of claim 25 in combination with an umbrella which opens and closes with said driven motion.

Claim 29 (previously amended). The system of claim 25 in combination with a parasol which opens and closes with said driven motion.

Claim 30 (original). The system of claim 25 further comprising a second central element and a second set of first and second elements, all being spaced apart from said central element, adapted for use with an awning, which opens and closes with said driven motion.

Claim 31 (original). The system of claim 1 further comprising a third element nested within said second element and arranged for telescopically-driven motion therein, said third element

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being linked to said first element by a spring-loaded tape tending to telescopically close said first, second and third elements together, said spring-loaded tape being calibrated with measurements such that driving motion of said first linking means provides said spring-loaded tape with telescopically-driven motion to enable distance measurement.

Claim 32 (original). The system of claim 1 adapted for use with a tape measure.

Claim 33 (original). The system of claim 1 further comprising a tool attached proximate at least one end of one of said first and second elements.

Claim 34 (original). The system of claim 33 wherein said tool is a drill and said first and second elements are rotatable about a common axis.

Claim 35 (original). The system of claim 33 further comprising control means for determining a working angle of said tool angle in relation to said driven motion of said first and second elements.

Claim 36 (original). The system of claim 1 wherein said linking means is enclosed within at least one of said first and second elements.

Claim 37 (original). The system of claim 1 wherein said first and second elements are rotatable about a common axis.

Claim 38 (original). The system of claim 1 wherein said first and second elements are movable side-by-side in tracks disposed adjacent one another.

Claim 39 (previously amended). The system of claim 38 adapted for use with curtains, which open and close with said driven motion.

Claim 40 (original). The system of claim 38 adapted for use with shutters, which open and close with said driven motion.

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Claim 41 (original). The system of claim 38 further comprising rollers mounted at the ends of said first and second elements for guiding said movement in said tracks.

Claim 42 (original). The system of claim 38 adapted for use as a conveyor, which opens and closes with said driven motion and which has cargo placed anywhere on at least one of said first and second elements.

Claim 43 (original). The system of claim 1 adapted for use as a wind instrument.

Claim 44 (original). The system of claim 1 adapted for use as a percussion instrument.

Claim 45 (original). The system of claim 1 adapted for use with illumination.

Claim 46 (original). The system of claim 1 adapted for use on a sailboat mast.

Claim 47 (original). The system of claim 1 adapted for use as an assembly toy.

Claim 48 (previously amended). The system of claim 1 wherein either of said first and second elements has mounted at an end thereof a surface for supporting at least one of a tool, an electrical device, a device for telecommunications, control, and/or home entertainment with at least one of flexible wiring, cable and/or tubes being extendible and retractable during motion of said first and second elements, at least one of said first and second elements being supported in a room to enable positioning of said surface at a desired position.

Claim 49 (previously added). The system of claim 1 further comprising a spring connected to at least one of said first and second elements to provide a force for reversing said reversible driving motion.

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Claim 50 (previously added, currently amended). A motion transmission and multiplication system for use with systems, devices [or] and structures that require movement of segments, to enable extendable and retractable motion, [such as] to be used with cleaning systems, measuring systems, hand-movable tools, music instruments and accessories, electrical and telecommunication devices, transportation and delivery systems, shades, sailing boats, chairs, tripods, tables and tents, said motion transmission and multiplication system comprising: at least first and second hand-movable elements each having anterior and posterior ends, said elements extending in the same orientation, each element having at least one point thereon connectable to a tool or other object; and at least a first means linking said first and second elements and being movable with respect to at least one of them, said first linking means also being connectable to an additional element, said first linking means being arranged on said elements such that when said first linking means is moved with a controllably reversible driving motion with respect to either of said anterior and posterior ends of a selected reference one of either of said first and second elements, wherein said driving motion is in a direction in-line with said orientation, then said first and second elements, and if connected, said additional element are simultaneously provided with a controllably reversible and multipliable, non gravity dependent, linear-to-linear driven motion with respect to each other in-line with said orientation, said driven motion being in the same direction as said driving motion, or reverse thereto, in accordance with which reference one of said first and second elements was selected in respect of said driving motion.